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(54) Abstract Title
Painted and sealed rubber tiles

(57) Tiles are produced by forming a rubber block 12 from granulated rubber particles, applying paint 14 and coating the painted block with a sealant 16. The paint 14 can be acrylic, or water or solvent based. The sealant can be a resin and may have a UV stabilizer. The paint and sealant may be combined so that they are can be applied in a single operation. The sealant can include particles, such as sand, to improve the grip characteristics. The rubber block may be hot moulded and may be produced as a relatively large block to be divided into smaller tiles.

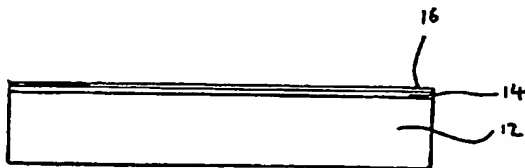


Fig. 1

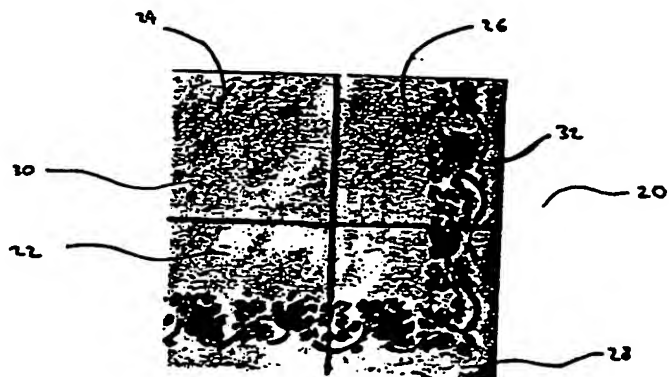


Fig. 2

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GB 2 345 269 A

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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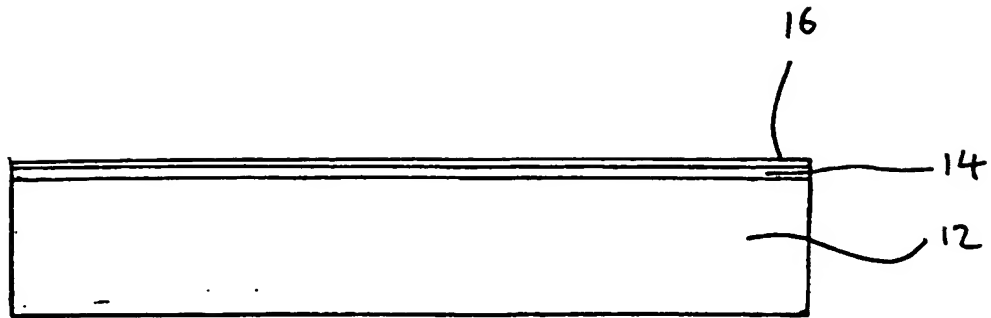


Fig. 1

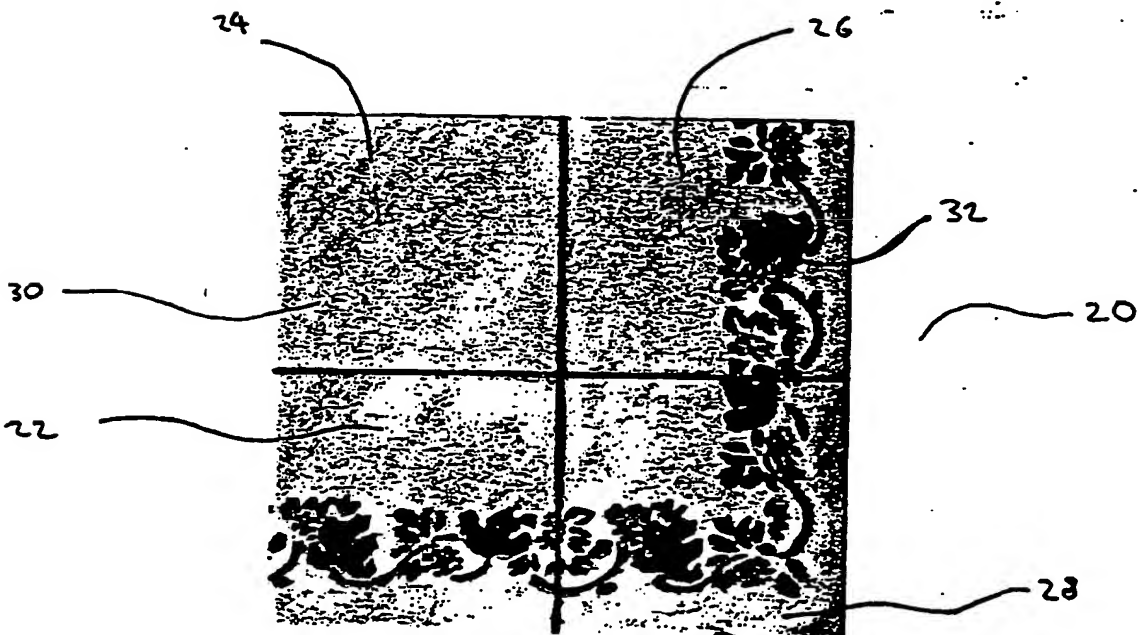


Fig. 2

Method for Producing Decorative Tiles

This invention relates to a method for producing decorative tiles.

Rubber tiles, of the type manufactured from granulated rubber, are well known. Such tiles are typically utilised in applications such as children's play areas and sport surfaces. There are many applications, such as in swimming pools, car parks and entrances to buildings, in which it is desirable to use paving slabs or tiles which are decorative in nature. Traditionally, decorative ceramics of desired colours and/or having decorative patterns or images thereon have been used for these purposes.

Ceramic tiles can be considerably more expensive to produce than rubber tiles, and thus there would be clear economic advantage in producing decorative rubber tiles. It is known to include pigments in the rubber tiles, so as to produce coloured tiles. In this instance, each tile is a single colour and there is no possibility of putting a unique design on to an individual tile at reasonable cost. Furthermore, the pigment is an additional cost component. It is also known to put a second coat of coloured rubber on top of a standard tile in order to provide a coloured tile. The second layer is an additional cost component and, again, there is little possibility of putting a unique design on an individual tile at reasonable cost. Thus, there is no industrially compatible method available which can produce decorative rubber tiles with any degree of flexibility in the design. In particular, it is not possible to provide multicoloured tiles having designs such as decorative patterns, images and the like thereon.

The present invention overcomes the aforementioned problems, thereby satisfying the aforementioned long felt need. Furthermore, the physical characteristics of the tiles can be improved.

For the avoidance of doubt, the term "granulated rubber particles" is understood to encompass all particulate rubbers suitable as precursors for rubber tiles, including shredded rubber particles.

According to the invention there is provided a method for producing decorative rubber tiles comprising the steps of:

producing a block of rubber from granulated rubber particles;

painting said block of rubber; and

coating the painted block with a sealant;

In this way, tiles can be produced, in a cost effective manner, with a wide range of designs and decorative effects. Additionally, the sealant coat can provide beneficial effects.

The block may be divided to produce a plurality of decorative rubber tiles.

The block may be painted with a solvent based or a water based paint, such as an acrylic paint.

The block may be painted with a background coat of paint, and a design may be painted onto the background coat. The design may be painted onto the block through a stencil.

The sealant may comprise a resin.

The sealant may comprise a UV stabiliser.

The sealant may comprise a small proportion of particulate matter so as to improve the grip characteristics of the tiles. The particulate matter may be sand.

The rubber block may be produced by hot moulding the granulated rubber particles.

Methods in accordance with the invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a cross-sectional view of a tile produced according to the invention; and

Figure 2 is a plan view of a rubber block.

The invention comprises a method for producing decorative rubber tiles comprising the steps of:

producing a block of rubber from granulated rubber particles;

painting said block of rubber; and

coating the painted block with a sealant.

Figure 1 shows a cross-sectional view through a tile produced according to the invention, and comprising a rubber layer 12, paint layer 14 and a sealant layer 16.

Although it is possible to paint a single tile, it is preferred to paint a block of rubber, and to divide the block to produce a plurality of decorative tiles. Figure 2 shows a block of rubber 20 which has been divided to produce four decorative tiles 22, 24, 26, 28. The block 20 can be completely divided to produce a plurality of separate tiles. Alternatively, it is possible to provide dividing canals through the block 20, which gives the impression of separate tiles even though the individual tile units in the block are physically connected.

The use of water based paints is preferred, because of environmental considerations and also because the paint does not react with any of the polymers present in the rubber. Acrylic paints are particularly preferred, but a solvent based paint could be used instead.

In a preferred method, the block is painted with a background coat of paint, and a design is painted onto the background coat. The example of Figure 2 shows the background coat 30 and a design 32. The design can be any desired pattern, image or the like. It is also, of course, possible to produce coloured tiles of a single colour. Any convenient method can be used to paint the design in correct register with the tile, such as through the use of a stencil.

After painting, the block is coated with a sealant. The sealant provides protection for the paint layer, which would otherwise quickly be abraded and worn by everyday use. A sealant may be selected which permits the tile to retain its flexibility. Resin sealants, such as commercially available, premixed two pack systems, are suitable.

The paint finish may be incorporated into the sealant so that both may be applied in a single operation.

Typically, however, the base rubber tile is made from granulated and shredded rubber, mixed with a moisture curing urethane binder, poured into a mould, then pressed out. The paint is applied, then a final sealing coat of a mixture of triglyceride oil and modified resin with added liquid urethane hardener.

It has been found to be advantageous to include a small amount of particulate matter, such as sand, in the sealant. This has been found to improve the grip characteristics of the tiles, and also the hardness. The sealant preferably also comprises a UV stabiliser. In addition to being decorative, the resultant tiles are very hard wearing, and may be used as an anti-slip surface.

The rubber block is produced using a hot moulding technique. In a representative and non-limiting example, rubber granules in the size range 1 to 4mm are used to produce a rubber block of dimensions 1m x 1m. This block can be cut into four tiles, each of dimensions 50cm x 50cm.

The method described above enables flexible low cost production of decorative tiles with an extremely wide range of possible designs. Furthermore, the physical properties of the tile can be enhanced. Tiles produced using the present invention can be used in a wide range of new or uncommon applications, such as in swimming pools, car parks and building entrances. Additionally, such tiles can be used to enhance the quality of established applications, for example by providing children's play areas with brightly coloured floors, possibly with an appealing design or motif thereon. It is possible to use the method to provide decorative effects on other rubber

objects. The method may be used to mimic traditional stone and ceramic floor materials such as terracotta and limestone.

CLAIMS

1. A method for producing decorative rubber tiles comprising the steps of:

producing a block of rubber from granulated rubber particles;

painting said block of rubber; and

coating the painted block with a sealant.
- ~~2. A method according to claim 1 in which the block is divided to produce a plurality of decorative rubber tiles.~~
3. A method according to claim 1 or claim 2 in which the block is painted with a water based paint.
4. A method according to claim 3 in which the block is painted with acrylic paint.
5. A method according to claim 1 or claim 2 in which the block is painted with a solvent based paint.
6. A method according to any one of claims 1 to 5 in which the block is painted with background coat of paint, and a design is painted onto the background coat.
7. A method according to claim 6 in which the design is painted onto the block through a stencil.

8. A method according to any of claims 1 to 7 in which the sealant comprises a resin.
9. A method according to any previous claims in which the sealant comprises a UV stabiliser.
10. A method according to any previous claims in which the sealant comprises a small proportion of particulate matter so as to improve the grip characteristics of the tiles.
11. A method according to claim 10 in which the particulate matter is sand.
12. A method according to any previous claims in which the rubber block is produced by hot moulding the granulated rubber particles.



- 9 -

Application No: GB 9818961.6
Claims searched: 1-12

Examiner: Brendan Churchill
Date of search: 26 April 2000

**Patents Act 1977
Search Report under Section 17**

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.R): B6G (GBZ, GK)

Int CI (Ed.7): B44C (5/04)
E01C (13/04)
E04B (1/66)
E04F (15/02, 15/10)

Other: Online: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
	NONE	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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